FIRST RESULTS OF A NEW MEASUREMENT METHOD FOR MAGNETIC REPEAT STATIONS, BASED ON NIGHT TIME OPERATION AND GNSS GEODESY

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The French magnetic repeat station network is currently made of 32 stations and has been reoccupied every five years since 1947. During recent surveys, it was found that several stations became unusable due to the increase of nearby human activity. Also, traditional azimuth markers such as church steeples are fragile and easily lost due to new constructions and/or vegetation growth. As a result, it is increasingly difficult to maintain a traditional repeat station network providing accurate measurements over an extended period of time. Another frequently noted limitation of the traditional methodology is the error caused by diurnal variations of ionospheric origin when making measurements during the day. Using a nearby observatory (Chambon-la-Forêt in the case of the French network) to remove these variations is not a satisfactory solution, as the ionospheric field and its induced counterpart may significantly vary over a few hundreds of km.

We have develop a new method for magnetic repeat measurements and implemented a network of 12 stations during May-June 2012, where repeat stations are located on airport premises, azimuth sightings are determined using GPS geodetic receivers and magnetic measurements are performed at night (02:00 AM local time) in order to prevent ionospheric field contamination effects. At the time of this XII Scientific Assembly, a one-year interval reiteration should be carried out. First results of secular variation observations compared with the last available IGRF will be reported as well operational and technical aspects of this method.